

AMENDMENTS TO THE CLAIMS

Claim 1 (Currently amended): A method for making a microdisplay pixel cell, the method comprising:

5 providing a semiconductor substrate defined with a plurality of active areas;

forming a gate oxide layer and a gate conductive layer sequentially on the semiconductor substrate;

10 performing a photo-etching-process(PEP) to the gate conductive layer to form ~~at least one~~ two gates on the semiconductor substrate and the each gate covering a portion of the active area;

forming ~~a plurality of~~ four sources/ and two drains(~~S/D~~) in the active area not covered by the two gates;

15 forming a first dielectric layer on the semiconductor substrate to cover the two gates, ~~and the~~ four sources/ and the two drains;

forming at least one row select contact plug in the first dielectric layer to electrically connect to the two gates;

20 forming at least one row select line atop the first dielectric layer, the row select line being electrically connected to the two gates through the row select contact plug;

forming a second dielectric layer atop the first dielectric layer and covering the row select line;

forming ~~at least one~~ four pixel cap top plates atop the second dielectric layer;

25 forming a capacitor dielectric layer atop the surface of the top plate; and

forming ~~at least one~~ pixel cap bottom plate atop the second dielectric layer and covering the four top plates.

30 Claim 2 (Original): The method of claim 1 wherein the gate conductive layer is a polysilicon layer.

Claim 3 (Currently amended): The method of claim 1 wherein at least one first contact plug is formed in the first dielectric layer and the second dielectric layer for electrically connecting the four sources and the four top plates.

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Claim 4 (Currently amended): The method of claim 1 wherein at least one second contact plug is formed in the first dielectric layer and the second dielectric layer for electrically connecting the two drains to a video data line.

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Claim 5 (Original): The method of claim 1 wherein the row select line is composed of a metal and is used as a scan line of the microdisplay.

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Claim 6 (Currently amended): The method of claim 1 wherein both the one bottom plate and the four top plates are composed of a metal.

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Claim 7 (Currently amended): The method of claim 6 wherein the metal forming the one bottom plate and the four top plates comprises titanium (Ti), titanium nitride (TiN), aluminum (Al), copper (Cu) or an alloy of above-mentioned materials.

Claim 8 (cancelled)

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Claim 9 (Original): The method of claim 1 wherein the microdisplay is a reflective liquid crystal on silicon (LCOS) display.

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Claim 10 (Currently amended): A method for making a microdisplay pixel cell, the method comprising:

providing a semiconductor substrate defined with a plurality of active areas;

forming ~~at least one~~ two gates on the semiconductor substrate and the two gates covering a portion of the active area;

forming ~~a plurality of~~ four sources ~~and two drains(S/D)~~ in the active area not covered by the two gates;

forming a first dielectric layer on the semiconductor substrate to cover the two gates, ~~and the~~ four sources ~~and two~~ drains;

5 forming ~~at least one~~ four pixel cap top plates atop the first dielectric layer;

forming a capacitor dielectric layer atop the surface of the four top plates; and

10 forming ~~at least one~~ pixel cap bottom plate atop the first dielectric layer and covering the four top plates.

Claim 11 (Currently amended): The method of claim 10 wherein a method for forming the gate comprises:

15 forming a gate oxide layer and a polysilicon layer sequentially on the semiconductor substrate; and

performing a photo-etching-process(PEP) to the polysilicon layer to simultaneously form ~~at least one~~ two gates and at least one row select line electrically connected to the two gates on the semiconductor substrate, the two gates covering a portion of the active area.

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Claim 12 (Currently amended): The method of claim 10 further comprises forming a second dielectric layer under the first dielectric layer and the second dielectric layer covers the two gates, ~~and the~~ four sources ~~and the~~ two drains.

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Claim 13 (Currently amended): The method of claim 12 further comprises the following steps:

forming at least one row select contact plug electrically connected to the two gates in the second dielectric layer;

30 forming at least one row select line atop the second dielectric layer, the row select line being electrically connected to the two gates through the row select contact plug; and

forming the first dielectric layer to cover the row select line.

Claim 14 (Original): The method of claim 13 wherein the row select line is composed of a metal and is used as a scan line of the microdisplay.

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Claim 15 (Currently amended): The method of claim 10 wherein both the one bottom plate and the four top plates are composed of metal and the metal material comprises titanium (Ti), titanium nitride (TiN), aluminum (Al), copper (Cu) or an alloy of above-mentioned materials.

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Claim 16 (Currently amended): The method of claim 10 further comprises forming at least one first contact plug in the first dielectric layer and the second dielectric layer for electrically connecting the four sources and the one top plate.

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Claim 17 (Currently amended): The method of claim 10 further comprises forming at least one second contact plug in the first dielectric layer and the second dielectric layer for electrically connecting the two drains to a video data line.

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Claim 18. (Cancelled)

Claim 19 (Original): The method of claim 10 wherein the microdisplay is a reflective liquid crystal on silicon (LCOS) display.